

## REMARKS

In accordance with the above amendments, claims 18-21 (4 claims) have been canceled and new claims 35-36 (2 claims) have been added. Claims 22, 25 and 27 have been amended. Thus, claims 22-38 remain under consideration in this application and no claim presently stands as having been allowed.

The cancellation of claims 20 and 21 should render the claim rejections under 35 USC § 112 moot and withdrawal of this rejection is respectfully requested.

The rejection of independent claims 18, 19 and claim 25 under 35 USC § 102(b) as being anticipated by Elrick et al (U.S. 4,029,529) is respectfully traversed. The following explanation is directed with respect to the new independent claims 35 and 36 and claims 25. Contrary to the opinion expressed by the Examiner, it should be noted that Elrick et al is not related to manufacture a use of single-based projectile-firing propellants. It should be noted that the composition relied on by the Examiner is not their propellant, but merely a component of what is actually a composite multiple-base propellant. Thus, Elrick et al teach the manufacture of a composite modified rocket propellant in which the final formula contains a relatively low concentration of nitrocellulose as part of the binder system along with acrylic polymers and crosslinking agents.

In contrast, applicants' propellant is decidedly a single base projectile-firing or artillery-type propellant having a high

percentage of nitrocellulose, and particularly nitrocellulose of high N content. This qualification is also contained in the present claims and evidenced throughout applicants' specification. In this regard, note further that Elrick et al do not disclose high nitrogen nitrocellulose in their formula. The Elrick et al propellant formulas are unsuited for projectile firing.

While at column 4, lines 5-16, the reference (Elrick et al) does discuss a wide variety of solvents and plasticizers for nitrocellulose, it also states at line 5-7 that "In general, any solvent or plasticizer for nitrocellulose can be used as a solvent for the mixed resin propellant system of this invention". Thus, it is clear that Elrick et al do not recognize any advantage to the use of particular plasticizers generally and certainly not with respect to use in a projectile-firing type propellant as it does not disclose such a propellant. The reference clearly does not disclose or teach or suggest replacement of energetic, toxic plasticizers with more efficient, non-energetic or non-toxic plasticizers in a single base propellant. Applicants submit that the discovery of the present invention could not have come from the Elrick et al reference.

It is well known that in order to anticipate a claim, a reference must disclose each and every element of that claim and it is submitted that Elrick et al clearly does not meet this

burden. It is respectfully requested that this rejection be withdrawn.

The rejection of the claims under 35 USC § 103(a) as being unpatentable over Oversohl et al (3,364,086) in view of Elrick et al (4,029,529) and further in view of Plunguiian (3,451,883) and Yunan (5,187,320) is also respectfully traversed. Note that the focus of the Oversohl '086 reference is on the manufacture of very high burning rate propellants for applications to cast rocket propellant grains. As previously explained, the propellant of the present invention are clearly gun or artillery propellants which have different priorities. The Oversohl et al reference is not concerned with the use of non-energetic plasticizers to replace traditional high energy, toxic plasticizers.

While it is possible using hindsight to pick ingredients and percentages and conjure up a formula using only a non-energetic plasticizer from the ingredients, for example, listed in Table I (column 3) of Oversohl et al in a high nitrocellulose, single-base propellant, such is neither taught nor suggested by the Oversohl et al reference. Note that Example I involves only the preparation of porous granules from nitrocellulose and Example III involves only the preparation of non-porous granulate from nitrocellulose and its only use in the reference is in combination with porous granules in a double-base propellant with nitroglycerin. It should be noted that all the final explosives used in the reference are double base. Thus, the reference neither teaches nor suggests anything

about plasticizers to one skilled in the art. The reference is interested in the production of granules of nitrocellulose, be they porous or non-porous, for use in double base propellants. The work does demonstrate the use of diphenyl amine and ethyl centralite as stabilizers for nitrocellulose, however.

Whereas Plunguiian '883 names a wide variety of plasticizers as being suitable for nitrocellulose, among them being adipates and citrates, the patent is unrelated to propellant manufacture and end use and teaches only that nitrocellulose can be used in "latex emulsions" to produce shaped articles. The only mention of propellant related articles is for combustible cartridge cases.

Yunan '320 is also unrelated to single-base propellant manufacture or end use. Instead, that reference is directed to the manufacture of plastic bonded explosives (PBX's) that utilize 2-30% nitrocellulose as a binder. Furthermore, the nitrocellulose used in this reference is clearly low nitrogen industrial grade material which one skilled in the art would recognize as being unsuitable for use in single-base propellants. The reference speculates that citrate plasticizers are good for this application because they do not affect the crystallinity of the solid explosives used in most PBX's. This reference, like the others, fails to suggest the application of the present invention.

It remains that the discovery that relatively smaller amounts of citrate or adipate plasticizers can successfully plasticize high nitrogen nitrocellulose in single-base gun propellants which allows

successful substitution of them for the energetic plasticizer materials traditionally used in such formulas is neither shown nor suggested by the references, taken either singularly or in combination. This, as shown in the comparison formulas in Table 1 and Table 2A, for example, also allows more nitrocellulose to be used in the formulas.

In view of the above amendments, taken together with the remarks herein, the Examiner is requested to enter this Amendment and reconsider and withdraw the present rejections. Applicants believe that the present amendments do put the claims in condition for allowance and reconsideration and allowance of the claims is respectfully requested.

Respectfully submitted,

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